

MORBIDITY AND MORTALITY WEEKLY REPORT

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Current Trends

Mortality Patterns — United States, 1987

Based on death certificate information compiled by CDC's National Center for Health Statistics (NCHS) (1), 2,123,323 deaths were registered in the United States in 1987. This is 17,962 more deaths than in 1986 and the largest annual final number ever recorded. In 1987, nearly three fourths of deaths were caused by the first four leading causes of death—heart disease, cancer, stroke, and unintentional injuries. This report summarizes mortality data compiled by NCHS for 1987 (1).

Despite the increase in the number of deaths, the overall age-adjusted death rate* for 1987 declined to a record low of 535.5 per 100,000 population—or approximately 1.0% lower than in 1986 (541.7). From 1986 to 1987, rates declined for 13 of the 15 leading causes of death (Table 1). The rate for heart disease, the greatest contributor to U.S. mortality, declined by 3.1%. The rate for cancer declined for the second consecutive year, in contrast to the general increase since 1950. Mortality from homicide decreased by 4.4%, the largest decline among the 15 leading causes of death. From 1986 to 1987, the ranking of the leading causes of death remained unchanged with the exception of congenital anomalies, which was replaced as the 15th leading cause of death by human immunodeficiency virus (HIV) infection.

In 1987, age-adjusted death rates for men were higher than those for women (Table 2). The greatest sex differential in mortality was for HIV infection, for which the rate for males was 9.1 times that for females. The rate for unintentional injuries (*International Classification of Diseases, Ninth Revision* [ICD-9] "accidents and adverse effects"[†] [rubrics E800–E949] [2]) was 2.7 times higher for males than for females. The smallest difference between the sexes was for diabetes mellitus (male/female ratio = 1.1:1).

When compared with 1986, age-adjusted death rates declined for white persons[‡] (from 518.0 to 511.1) and remained essentially unchanged for black persons (from 781.0 to 778.6). The largest difference between rates was for homicide, with the rate for blacks 6.0 times that for whites (Table 2). Of the 15 leading causes of death,

*Age-adjusted to the 1940 U.S. population.

[†]When a death occurs under "accidental" circumstances, the preferred term within the public health community is "unintentional injury."

[‡]Hispanics are included in totals for both white persons and black persons.

Mortality Patterns — Continued

two—suicide and chronic obstructive pulmonary disease and allied conditions—had lower death rates for blacks than for whites.

In 1987, HIV infection accounted for 13,468 deaths. Of these, 8700 (64.6%) were in white males, 3301 (24.5%) in black males, 739 (5.5%) in black females, and 628 (4.7%) in white females. Most (72.9%) HIV-associated deaths occurred in persons aged 25–44 years. Age-adjusted death rates were highest for black males (25.4), followed by white males (8.3), black females (4.7), and white females (0.6). Age-specific death rates followed a similar pattern.

TABLE 1. Age-adjusted death rates* for 1987 and percent changes in age-adjusted death rates for the 15 leading causes of death from 1986 to 1987 and 1979 to 1987 — United States

Rank [†]	Cause of death (ICD-9)	Age-adjusted death rate for 1987	% Change:	
			1986 to 1987	1979 to 1987
1	Diseases of the heart (390–398, 402, 404–429)	169.6	–3.1	–15.0
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140–208)	132.9	–0.2	1.6
3	Cerebrovascular disease (430–438)	30.3	–2.3	–27.2
4	Accidents and adverse effects [‡] (E800–E949)	34.6	–1.7	–19.3
	Motor vehicle accidents (E810–E825)	19.5	0.5	–15.9
	All other accidents and adverse effects (E800–E807, E826–E949)	15.2	–3.2	–22.4
5	Chronic obstructive pulmonary disease and allied conditions (490–496)	18.7	–0.5	28.1
6	Pneumonia and influenza (480–487)	13.1	–3.0	17.0
7	Diabetes mellitus (250)	9.8	2.1	—
8	Suicide (E950–E959)	11.7	–1.7	—
9	Chronic liver disease and cirrhosis (571)	9.1	–1.1	–24.2
10	Atherosclerosis (440)	3.6	–2.7	–36.8
11	Nephritis, nephrotic syndrome, and nephrosis (580–589)	4.8	–2.0	11.6
12	Homicide and legal intervention (E960–E978)	8.6	–4.4	–15.7
13	Septicemia (038)	4.5	4.7	95.7
14	Certain conditions originating in the perinatal period [§] (760–779)	—	–2.2	–28.9
15	Human immunodeficiency virus infection (new code: 042–044)	5.5	—	—
	All causes	535.5	–1.1	–7.2

*Per 100,000 population, age-adjusted to 1940 U.S. population.

[†]Based on number of deaths.

[‡]When a death occurs under "accidental" circumstances, the preferred term within the public health community is "unintentional injury."

[§]Based on infant mortality rates.

Mortality Patterns — Continued

In 1987, overall life expectancy at birth reached an all-time high of 75 years, increasing to 75.6 years for whites and remaining stable (69.4 years) for blacks. The difference in life expectancy between whites and blacks narrowed from 7.6 years in 1970 to 5.6 years in 1984, then increased to 6.2 years from 1984 to 1987. The difference in life expectancy between the sexes, which widened from 1900 to 1972, narrowed after 1979. Women are still expected to outlive men by an average of 6.9 years.

Reported by: Div of Vital Statistics, National Center for Health Statistics; Div of Surveillance and Epidemiologic Studies, Epidemiology Program Office, CDC.

TABLE 2. Ratio of age-adjusted death rates* for the 15 leading causes of death, by sex and race — United States, 1987

Rank [†]	Cause of death (ICD-9)	Ratio of:	
		Male to female	Black to white [‡]
1	Diseases of the heart (390-398, 402, 404-429)	1.9	1.4
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140-208)	1.5	1.3
3	Cerebrovascular disease (430-438)	1.2	1.8
4	Accidents and adverse effects [§] (E800-E949)	2.7	1.2
	Motor vehicle accidents (E810-E825)	2.6	0.9
	All other accidents and adverse effects (E800-E807, E826-E949)	3.0	1.7
5	Chronic obstructive pulmonary disease and allied conditions (490-496)	2.0	0.8
6	Pneumonia and influenza (480-487)	1.8	1.5
7	Diabetes mellitus (250)	1.1	2.3
8	Suicide (E950-E959)	3.9	0.5
9	Chronic liver disease and cirrhosis (571)	2.3	1.8
10	Atherosclerosis (440)	1.3	1.1
11	Nephritis, nephrotic syndrome, and nephrosis (580-589)	1.5	2.8
12	Homicide and legal intervention (E960-E978)	3.2	6.0
13	Septicemia (038)	1.4	2.7
14	Certain conditions originating in the perinatal period** (760-779)	1.3	2.6
15	Human immunodeficiency virus infection (new code: 042-044)	9.1	3.2
	All causes	1.7	1.5

*Per 100,000 population, age-adjusted to 1940 U.S. population.

[†]Based on number of deaths.

[‡]Both groups include Hispanics.

[§]When a death occurs under "accidental" circumstances, the preferred term within the public health community for the cause of death is "unintentional injury."

**Based on infant mortality rates.

Mortality Patterns - Continued

Editorial Note: Death rates are usually based on the underlying cause of death, defined by the ICD-9 as "(a) the disease or injury which initiated the train of morbid events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury" (2). During a time when the age distribution is changing, age-adjusted death rates indicate more effectively than crude death rates changes in the risk of death. In addition, age-adjusted rates are better indicators for comparisons of mortality by sex or racial subgroup.

Factors that contributed to the increased number of deaths in 1987 included population growth and the aging of the U.S. population (i.e., the increasing proportion of older persons). Beginning with data for 1987, the ICD-9 was supplemented by new categories for coding HIV infection and acquired immunodeficiency syndrome (AIDS) (042-044) (3). Before 1987, many HIV-associated deaths were assigned codes for deficiency of cell-mediated immunity (ICD-9 279.1) (adapted for HIV/AIDS in 1983-1986), *Pneumocystis carinii* pneumonia (ICD-9 136.3), and other conditions.

(Continued on page 201)

TABLE I. Summary - cases of specified notifiable diseases, United States

Disease	12th Week Ending			Cumulative, 12th Week Ending		
	Mar. 24, 1990	Mar. 25, 1989	Median 1985-1989	Mar. 24, 1990	Mar. 25, 1989	Median 1985-1989
Acquired Immunodeficiency Syndrome (AIDS)	734	U*	201	10,155	7,485	4,530
Aseptic meningitis	73	56	75	987	951	951
Encephalitis: Primary (arthropod-borne & unspc)	8	7	18	138	133	191
Post-infectious	5	1	1	28	21	21
Gonorrhea: Civilian	13,974	12,320	13,297	154,161	156,927	186,615
Military	148	135	254	2,344	2,415	3,763
Hepatitis: Type A	503	664	484	6,166	7,867	5,704
Type B	402	479	526	4,353	4,701	5,515
Non A, Non B	42	47	73	418	563	679
Unspecified	25	61	64	385	606	783
Legionellosis	19	20	16	262	217	179
Leprosy	-	3	3	28	35	48
Malaria	20	28	14	230	238	157
Measles: Total ¹	175	215	166	3,377	1,941	685
Indigenous	130	207	163	3,048	1,827	594
Imported	45	8	4	329	115	70
Meningococcal infections	54	67	68	727	817	817
Mumps	85	132	132	1,199	1,347	1,207
Pertussis	20	23	41	570	441	441
Rubella (German measles)	21	6	7	118	55	66
Syphilis (Primary & Secondary): Civilian	1,334	835	808	10,636	9,172	7,990
Military	3	5	4	70	75	54
Toxic Shock syndrome	5	8	7	85	78	71
Tuberculosis	440	399	425	4,234	4,201	4,201
Tularemia	-	1	1	8	11	17
Typhoid Fever	6	7	6	79	89	59
Typhus fever, tick-borne (RMSF)	2	-	1	19	19	13
Rabies, animal	69	112	111	687	947	947

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1990		Cum. 1990
Anthrax	-	Leptospirosis (Hawaii 1)	8
Botulism: Foodborne	1	Plague	-
Infant	10	Polio myelitis, Paralytic, ¹	-
Other	1	Psittacosis (Mass. 1, Ohio 1, Nebr. 1)	40
Brucellosis	9	Rabies, human	-
Cholera (N.Y. City 1)	1	Tetanus	12
Congenital rubella syndrome	-	Trichinosis	11
Congenital syphilis, ages < 1 year	-		
Diphtheria	1		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.

¹Two of the 175 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

²One case of suspected poliomyelitis has been reported in 1990; none of 13 suspected cases in 1989 have been confirmed to date. Nine of 14 suspected cases in 1988 were confirmed and all were vaccine-associated.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending March 24, 1990 and March 25, 1989 (12th Week)

Reporting Area	AIDS	Aseptic Meningi- tis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel- losis	Leprosy
			Primary	Post-in- fectious			A	B	NA,NB	Unspeci- fied		
					Cum. 1990	Cum. 1990						
UNITED STATES	10,155	987	138	28	154,161	156,927	6,166	4,353	418	385	262	28
NEW ENGLAND	416	54	5	-	4,578	4,337	138	244	11	21	12	-
Maine	15	1	-	-	58	69	1	15	2	1	1	-
N.H.	26	4	-	-	36	51	4	15	-	2	1	-
Vt.	3	5	-	-	18	21	1	11	2	-	3	-
Mass.	242	17	1	-	1,690	1,767	99	160	5	17	4	-
R.I.	17	17	-	-	238	348	15	14	-	1	3	-
Conn.	113	10	4	-	2,538	2,081	18	29	2	-	-	-
MID. ATLANTIC	3,673	171	9	-	21,546	26,659	893	645	56	29	68	8
Upstate N.Y.	506	72	8	-	3,220	3,721	243	164	9	7	28	1
N.Y. City	2,257	26	1	-	9,516	12,137	98	225	10	12	8	4
N.J.	567	-	-	-	3,302	3,192	107	108	18	-	8	2
Pa.	343	73	-	-	5,508	7,609	445	148	19	10	24	1
E.N. CENTRAL	624	167	28	5	30,187	26,260	395	604	22	34	75	-
Ohio	147	51	8	2	9,547	9,989	57	131	8	4	31	-
Ind.	54	27	2	2	2,621	1,611	44	183	3	10	16	-
Ill.	294	25	8	1	9,010	7,606	120	43	3	10	-	-
Mich.	86	58	10	-	7,551	7,731	114	151	7	10	20	-
Wis.	44	6	-	-	1,458	2,323	60	96	1	-	8	-
W.N. CENTRAL	263	41	9	1	8,455	6,592	328	191	23	8	14	-
Minn.	46	4	4	1	1,060	650	49	16	7	-	-	-
Iowa	11	4	1	-	649	529	81	27	1	2	1	-
Mo.	156	17	-	-	4,875	4,127	149	125	7	4	11	-
N. Dak.	-	1	-	-	24	36	2	2	2	1	-	-
S. Dak.	1	2	2	-	46	62	11	3	-	-	-	-
Nebr.	16	8	2	-	379	310	24	13	2	-	1	-
Kans.	34	5	-	-	1,422	878	12	5	3	1	1	-
S. ATLANTIC	1,764	222	40	8	42,760	42,994	718	850	69	46	36	1
Del.	27	7	1	-	552	691	35	23	2	-	1	-
Md.	256	45	5	-	4,694	4,633	349	122	9	3	8	1
D.C.	55	1	-	-	2,307	2,761	6	6	3	-	-	-
Va.	222	44	16	1	3,983	3,739	45	55	8	32	5	-
W. Va.	18	4	3	-	300	324	6	26	2	-	-	-
N.C.	159	20	9	-	7,018	6,390	140	250	32	-	9	-
S.C.	98	3	-	-	3,762	3,894	13	161	5	5	5	-
Ga.	320	12	3	1	9,388	8,105	53	97	2	3	6	-
Fla.	609	96	3	6	10,756	12,467	71	110	8	3	2	-
E.S. CENTRAL	242	66	10	-	12,990	13,163	79	347	30	2	19	-
Ky.	49	18	2	-	1,351	1,139	20	96	12	2	6	-
Tenn.	86	14	6	-	3,986	4,195	29	199	13	-	7	-
Ala.	50	27	2	-	4,637	4,431	30	52	5	-	6	-
Miss.	57	7	-	-	3,016	3,398	-	-	-	-	-	-
W.S. CENTRAL	994	42	5	3	14,555	16,739	518	243	26	38	14	9
Ark.	32	2	-	-	2,140	1,068	123	16	2	3	3	-
La.	182	10	2	1	2,844	3,624	30	65	-	1	3	-
Okla.	41	7	-	2	1,389	1,494	136	37	7	5	8	-
Tex.	739	23	3	-	8,172	9,963	229	125	17	27	-	9
MOUNTAIN	266	42	3	-	3,027	3,118	956	313	28	37	19	-
Mont.	3	1	-	-	29	48	21	23	2	1	-	-
Idaho	8	-	-	-	21	51	16	20	5	-	1	-
Wyo.	1	1	-	-	38	33	15	5	-	-	-	-
Colo.	84	15	-	-	775	653	67	59	8	16	3	-
N. Mex.	24	3	-	-	249	314	135	33	-	-	2	-
Ariz.	114	12	2	-	1,332	1,160	560	94	11	13	8	-
Utah	30	5	-	-	109	119	54	15	1	2	1	-
Nev.	22	5	-	-	476	740	88	64	1	5	4	-
PACIFIC	1,893	182	29	11	16,063	17,065	2,141	916	153	172	5	10
Wash.	130	-	1	1	1,306	1,505	339	136	26	8	2	1
Oreg.	66	-	-	-	614	682	245	96	10	5	-	-
Calif.	1,639	163	27	9	13,894	14,579	1,479	649	113	157	2	5
Alaska	10	2	-	-	264	199	43	17	3	-	-	-
Hawaii	48	17	1	1	75	100	35	18	1	2	1	4
Guam	1	-	-	-	28	33	2	1	-	4	-	-
P.R.	397	25	4	-	278	235	26	24	-	18	-	-
V.I.	4	-	-	-	112	146	-	3	-	-	-	-
Amer. Samoa	-	-	-	-	20	11	7	-	-	-	-	3
C.N.M.I.	-	-	-	-	40	20	2	1	-	-	-	-

N: Not notifiable

U: Unavailable

C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending March 24, 1990 and March 25, 1989 (12th Week)

Reporting Area	Malaria	Measles (Rubella)					Meningo- coccal Infections	Mumps		Pertussis			Rubella			
		Indigenous		Imported*		Total		1990	Cum. 1990	1990	Cum. 1990	1989	Cum. 1989	1990	Cum. 1990	Cum. 1989
		Cum. 1990	1990	Cum. 1990	1990											
UNITED STATES	230	130	3,048	45	329	1,941	727	85	1,199	20	570	441	21	118	55	
NEW ENGLAND	26	6	52	-	10	61	46	-	12	2	80	13	-	2	1	
Maine	-	-	-	-	-	-	5	-	-	-	1	4	-	-	-	
N.H.	2	-	-	-	7	-	1	-	4	-	7	5	-	-	-	
Vt.	3	-	-	-	1	1	4	-	1	-	2	1	-	-	1	
Mass.	15	-	2	-	-	11	24	-	4	2	65	-	-	-	-	
R.I.	2	6	20	-	2	19	1	-	3	-	-	2	-	1	-	
Conn.	4	-	30	-	-	30	11	-	-	-	5	1	-	1	-	
MID. ATLANTIC	53	29	314	42	112	182	117	4	75	1	144	38	-	2	2	
Upstate N.Y.	11	-	126	418	101	20	41	-	28	-	117	16	-	1	1	
N.Y. City	21	5	31	11	5	24	9	-	-	-	1	3	-	-	1	
N.J.	9	-	8	-	-	129	24	-	19	-	7	17	-	-	-	
Pa.	12	24	149	-	6	9	43	4	29	1	20	4	-	1	-	
E.N. CENTRAL	11	11	1,175	-	118	167	97	9	116	-	126	60	-	5	4	
Ohio	3	-	139	-	-	97	34	-	29	-	30	1	-	-	-	
Ind.	-	-	100	-	-	-	10	-	5	-	31	3	-	-	-	
Ill.	2	1	480	-	-	69	26	-	19	-	20	26	-	5	3	
Mich.	4	10	146	-	119	-	17	9	46	-	28	6	-	-	-	
Wis.	2	-	310	-	-	1	10	-	15	-	17	24	-	-	1	
W.N. CENTRAL	2	-	83	-	1	221	26	1	43	1	12	14	-	-	1	
Minn.	-	-	27	-	1	-	5	-	-	-	-	-	-	-	-	
Iowa	-	-	21	-	-	-	1	1	7	1	2	6	-	-	-	
Mo.	2	-	35	-	-	211	10	-	21	-	7	7	-	-	1	
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S. Dak.	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	
Neb.	-	-	-	-	-	-	3	-	1	-	1	-	-	-	-	
Kans.	-	-	-	-	-	10	5	-	14	-	1	1	-	-	-	
S. ATLANTIC	84	5	181	-	42	104	129	35	444	2	54	31	-	9	-	
Del.	1	-	4	-	-	-	1	-	-	-	1	-	-	-	-	
Md.	12	1	17	-	11	10	15	33	264	1	19	4	-	-	-	
D.C.	5	-	-	-	1	2	2	-	5	-	1	-	-	-	-	
Va.	13	-	9	-	2	-	16	-	12	-	4	3	-	-	-	
W. Va.	1	-	6	-	-	-	5	2	32	-	5	4	-	-	-	
N.C.	5	-	3	-	-	90	22	-	27	1	9	10	-	-	-	
S.C.	-	-	1	-	-	-	10	-	10	-	3	-	-	-	-	
Ge.	5	-	2	-	8	-	24	-	25	-	6	4	-	-	-	
Fla.	12	4	139	-	20	2	34	-	89	-	4	6	-	9	-	
E.S. CENTRAL	4	1	38	-	-	2	37	1	34	4	22	24	-	1	-	
Ky.	1	-	-	-	-	1	12	-	-	-	-	-	-	-	-	
Tenn.	2	-	18	-	-	-	13	-	14	2	8	11	-	1	-	
Ala.	1	1	5	-	-	1	12	-	3	2	13	10	-	-	-	
Miss.	-	-	15	-	-	-	-	1	17	-	1	3	-	-	-	
W.S. CENTRAL	2	51	290	2	11	939	47	20	256	-	9	7	-	-	5	
Ark.	-	-	-	-	-	-	3	9	69	-	-	3	-	-	-	
La.	-	-	-	-	-	1	11	7	53	-	1	1	-	-	-	
Okla.	2	-	36	-	-	23	7	-	63	-	8	3	-	-	-	
Tex.	-	51	252	21	11	915	26	4	71	-	-	-	-	-	5	
MOUNTAIN	5	25	109	1	14	18	18	6	73	4	57	187	5	6	2	
Mont.	-	-	-	15	1	13	4	-	-	-	-	-	5	5	1	
Idaho	2	-	-	-	-	1	-	-	31	2	4	13	-	-	-	
Wyo.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	
Colo.	-	1	11	-	2	1	9	1	7	2	39	17	-	-	-	
N. Mex.	-	12	34	-	-	2	-	N	N	-	1	3	-	-	-	
Ariz.	3	6	43	-	6	1	2	2	24	-	7	148	-	-	-	
Utah	-	-	-	-	-	-	1	-	2	-	3	5	-	-	-	
Nev.	-	6	21	-	3	-	2	3	7	-	3	1	-	-	-	
PACIFIC	73	2	806	-	20	247	210	9	146	6	86	67	16	93	40	
Wash.	5	-	6	-	11	1	21	-	16	4	20	13	-	-	-	
Oreg.	4	-	-	-	-	-	24	N	N	-	3	2	-	-	-	
Calif.	63	-	761	-	8	242	161	9	127	1	38	50	16	89	34	
Alaska	-	2	39	-	-	-	4	-	-	-	-	-	-	-	-	
Hawaii	1	-	1	-	1	4	-	-	3	1	5	2	-	4	6	
Guam	1	U	-	U	-	-	-	U	-	U	-	1	U	-	-	
P.R.	-	54	101	-	-	149	4	-	3	-	4	2	-	-	-	
V.I.	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-	
C.N.M.I.	-	U	-	-	-	-	-	-	2	U	-	-	-	U	-	

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable ¹International ²Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending March 24, 1990 and March 25, 1989 (12th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic- shock Syndrome	Tuberculosis		Tula- ræmia	Typhoid Fever	Typhus Fever (Tick borne) (RMSF)	Rabies, Animal
	Cum. 1990	Cum. 1989		Cum. 1990	Cum. 1989				
UNITED STATES	10,636	9,172	85	4,234	4,201	8	79	19	687
NEW ENGLAND	443	356	5	85	99	-	4	-	-
Maine	3	1	-	-	2	-	-	-	-
N.H.	26	-	1	1	4	-	-	-	-
Vt.	-	-	-	2	1	-	-	-	-
Mass.	162	121	3	35	51	-	3	-	-
R.I.	1	9	-	20	17	-	-	-	-
Conn.	251	225	1	27	24	-	1	-	-
MID. ATLANTIC	2,219	1,813	9	1,060	906	1	20	3	182
Upstate N.Y.	140	172	4	17	79	-	7	-	3
N.Y. City	1,236	733	2	753	552	-	5	-	-
N.J.	365	302	-	159	126	1	7	3	60
Pa.	476	606	3	151	149	-	1	-	119
E.N. CENTRAL	608	329	25	460	454	-	10	1	11
Ohio	110	23	10	57	82	-	3	-	2
Ind.	6	12	2	17	32	-	-	-	-
Ill.	240	153	-	216	203	-	4	-	4
Mich.	170	125	13	149	121	-	3	1	-
Wis.	82	16	-	21	16	-	-	-	5
W.N. CENTRAL	80	70	9	104	118	4	-	2	84
Minn.	31	6	-	20	26	-	-	-	38
Iowa	7	11	1	10	22	-	-	-	10
Mo.	36	34	5	47	39	3	-	2	2
N. Dak.	1	1	-	4	4	-	-	-	11
S. Dak.	-	-	-	4	7	-	-	-	13
Nebr.	2	10	2	7	6	1	-	-	-
Kans.	3	8	1	12	14	-	-	-	10
S. ATLANTIC	3,518	3,343	2	796	855	2	7	5	217
Del.	51	43	-	9	6	-	-	-	2
Md.	289	182	-	76	66	-	4	-	65
D.C.	310	192	-	21	43	-	-	-	-
Va.	155	134	-	63	77	-	-	-	48
W. Va.	4	4	-	13	21	-	-	-	4
N.C.	399	191	1	100	69	1	-	3	2
S.C.	216	154	-	109	89	1	-	2	26
Ga.	765	752	-	108	119	-	1	-	55
Fla.	1,329	1,691	1	299	363	-	2	-	15
E.S. CENTRAL	942	638	5	277	374	-	-	1	26
Ky.	18	15	-	91	90	-	-	-	10
Tenn.	326	253	3	63	94	-	-	1	1
Ala.	331	234	2	95	116	-	-	-	15
Miss.	267	196	-	28	74	-	-	-	-
W.S. CENTRAL	1,667	1,220	5	518	437	-	2	6	93
Ark.	110	94	-	59	56	-	-	-	6
La.	518	254	1	62	61	-	-	-	-
Okla.	48	15	4	44	26	-	-	6	19
Tex.	991	857	-	363	294	-	2	-	66
MOUNTAIN	186	183	11	99	126	1	6	-	19
Mont.	-	-	-	4	4	-	-	-	7
Idaho	4	1	-	1	3	-	-	-	-
Wyo.	-	-	1	-	-	-	-	-	10
Colo.	13	36	3	6	2	-	-	-	-
N. Mex.	11	4	4	23	19	1	-	-	1
Ariz.	128	40	2	50	61	-	4	-	-
Utah	2	5	-	-	21	-	-	-	-
Nev.	28	98	-	15	18	-	2	-	1
PACIFIC	973	1,220	14	813	830	-	30	1	55
Wash.	62	80	1	59	43	-	-	-	-
Oreg.	24	69	-	21	27	-	-	-	-
Calif.	878	1,064	12	684	709	-	29	1	41
Alaska	3	2	-	13	13	-	-	-	14
Hawaii	6	5	1	28	38	-	1	-	-
Guam	-	3	-	8	18	-	-	-	-
P.R.	228	102	-	29	52	-	-	-	7
V.I.	-	1	-	-	1	-	-	-	-
Amer. Samoa	-	-	-	3	1	-	-	-	-
C.N.M.I.	-	1	-	6	1	-	4	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending
March 24, 1990 (12th Week)

Reporting Area	All Causes, By Age (Years)						P&I**	Total	Reporting Area	All Causes, By Age (Years)						P&I**	Total
	All Ages	>65	45-64	25-44	1-24	<1				All Ages	>65	45-64	25-44	1-24	<1		
NEW ENGLAND	620	436	117	40	13	14	55	1308	S. ATLANTIC	1,308	768	289	146	49	55	54	
Boston, Mass.	186	115	45	23	5	8	27		Atlanta, Ga.	181	86	53	29	6	7	1	
Bridgeport, Conn.	44	28	9	3	4	-	5		Baltimore, Md.	214	135	51	19	6	3	22	
Cambridge, Mass.	17	13	4	-	-	-	2		Charlotte, N.C.	73	38	24	4	1	6	4	
Fall River, Mass.	23	17	5	-	-	1	1		Jacksonville, Fla.	141	93	27	12	8	1	9	
Hartford, Conn.	46	36	6	5	-	-	8		Miami, Fla.	99	57	20	18	1	3	-	
Lowell, Mass.	28	20	8	-	-	-	7		Norfolk, Va.	57	35	10	5	3	4	4	
Lynn, Mass.	27	19	6	1	1	-	2		Richmond, Va.	75	43	16	11	2	3	8	
New Bedford, Mass.	25	19	3	2	1	-	2		Savannah, Ga.	45	25	15	2	2	1	-	
New Haven, Conn.	46	37	4	2	1	2	3		St. Petersburg, Fla.	84	63	6	8	3	4	3	
Providence, R.I.	43	33	8	1	-	1	5		Tampa, Fla.	90	49	21	8	4	7	9	
Somerville, Mass.	5	3	2	-	-	-	1		Washington, D.C.	212	118	38	26	13	16	4	
Springfield, Mass.	45	33	9	1	1	1	6		Wilmington, Del.	37	26	7	4	-	-	-	
Waterbury, Conn.	26	22	4	-	-	-	6										
Worcester, Mass.	49	42	4	2	-	1	10		E.S. CENTRAL	797	535	156	62	28	16	60	
MID. ATLANTIC	2,745	1,810	538	273	65	61	175		Birmingham, Ala.	145	93	31	12	6	3	7	
Albany, N.Y.	48	35	8	3	1	1	1		Chattanooga, Tenn.	67	47	12	6	2	-	-	
Allentown, Pa.	19	14	5	-	-	-	-		Knoxville, Tenn.	76	59	13	4	-	-	6	
Buffalo, N.Y.	100	66	20	12	-	2	6		Louisville, Ky.	107	75	24	3	2	3	11	
Camden, N.J.	41	23	7	6	4	1	-		Memphis, Tenn.	184	113	41	19	6	5	20	
Elizabeth, N.J.	16	11	5	-	-	-	2		Mobile, Ala.	42	26	7	4	3	2	1	
Erie, Pa.	44	31	7	3	1	2	2		Montgomery, Ala.	58	41	9	5	2	1	4	
Jersey City, N.J.	52	61	19	8	4	1	6		Nashville, Tenn.	118	81	19	9	7	2	10	
N.Y. City, N.Y.	1,429	899	281	180	37	32	74		W.S. CENTRAL	1,692	1,034	367	181	50	60	97	
Newark, N.J.	69	36	24	5	1	3	6		Austin, Tex.	59	41	7	10	1	-	13	
Paterson, N.J.	31	20	6	2	1	2	2		Baton Rouge, La.	50	26	16	6	2	-	1	
Philadelphia, Pa.	399	272	76	32	9	10	28		Corpus Christi, Tex.	53	42	8	2	1	-	2	
Pittsburgh, Pa.	79	52	17	6	2	2	6		Dallas, Tex.	208	105	59	27	6	11	4	
Reading, Pa.	39	30	8	1	-	-	6		El Paso, Tex.	52	34	9	5	2	-	3	
Rochester, N.Y.	119	90	19	7	1	2	16		Fort Worth, Tex.	96	58	13	7	5	13	15	
Schenectady, N.Y.	32	25	7	-	-	-	5		Houston, Tex.	734	434	169	89	24	16	18	
Scranton, Pa.	27	19	7	1	-	-	1		Little Rock, Ark.	90	57	19	6	1	7	12	
Syracuse, N.Y.	71	55	8	3	3	2	4		New Orleans, La.	65	33	18	6	3	5	-	
Trenton, N.J.	32	26	5	-	-	1	2		San Antonio, Tex.	148	107	22	11	5	3	12	
Utica, N.Y.	22	17	4	1	-	-	2		Shreveport, La.	44	33	7	3	-	1	5	
Yonkers, N.Y.	36	28	4	3	1	-	6		Tulsa, Okla.	93	62	20	9	-	2	8	
E.N. CENTRAL	2,358	1,577	473	164	56	86	122		MOUNTAIN	657	459	128	31	23	16	32	
Akron, Ohio	58	42	10	4	2	-	1		Albuquerque, N. Mex.	70	50	14	3	1	2	3	
Canton, Ohio	38	27	9	1	-	1	3		Colo. Springs, Colo.	47	34	7	2	4	-	5	
Chicago, Ill.	564	362	125	45	10	22	16		Denver, Colo.	92	64	20	4	2	2	5	
Cincinnati, Ohio	136	96	26	5	3	6	19		Las Vegas, Nev.	127	76	29	13	7	2	9	
Cleveland, Ohio	143	96	27	9	3	8	6		Ogden, Utah	25	19	4	-	1	1	4	
Columbus, Ohio	168	100	43	14	4	7	6		Phoenix, Ariz.	125	95	23	-	3	4	1	
Dayton, Ohio	116	80	26	8	1	1	11		Pueblo, Colo.	24	20	3	1	-	-	1	
Detroit, Mich.	249	151	52	23	8	13	4		Salt Lake City, Utah	29	19	5	2	-	3	-	
Evansville, Ind.	59	46	8	2	2	1	-		Tucson, Ariz.	118	82	23	6	5	2	4	
Fort Wayne, Ind.	45	32	8	3	2	-	4		PACIFIC	2,310	1,560	401	226	50	59	158	
Gary, Ind.	34	14	13	4	2	1	2		Berkeley, Calif.	21	13	6	1	-	1	1	
Grand Rapids, Mich.	70	48	7	9	2	4	6		Fresno, Calif.	75	53	14	3	1	4	7	
Indianapolis, Ind.	168	108	34	18	3	8	6		Glendale, Calif.	42	35	5	1	1	-	7	
Madison, Wis.	48	34	8	1	4	-	4		Honolulu, Hawaii	96	69	17	3	1	6	5	
Milwaukee, Wis.	151	121	22	3	4	1	4		Long Beach, Calif.	96	64	19	10	1	2	14	
Peoria, Ill.	55	37	11	1	2	4	9		Los Angeles, Calif.	825	544	146	83	21	8	41	
Rockford, Ill.	50	35	10	3	1	1	5		Oakland, Calif.	66	37	14	8	2	5	2	
South Bend, Ind.	55	40	9	3	1	2	3		Pasadena, Calif.	30	22	3	-	1	4	3	
Toledo, Ohio	97	68	18	5	2	4	5		Portland, Oreg.	144	107	20	10	4	3	12	
Youngstown, Ohio	54	43	7	3	-	1	8		Sacramento, Calif.	158	109	22	19	1	7	21	
W.N. CENTRAL	786	576	143	39	12	16	60		San Diego, Calif.	134	88	21	17	2	5	11	
Des Moines, Iowa	85	45	16	1	2	1	4		San Francisco, Calif.	165	103	31	26	2	3	4	
Duluth, Minn.	23	18	4	1	-	-	1		San Jose, Calif.	180	132	26	12	5	5	13	
Kansas City, Kans.	37	26	8	1	1	1	1		Seattle, Wash.	170	106	37	19	4	4	9	
Kansas City, Mo.	125	85	30	5	2	3	11		Spokane, Wash.	50	39	10	1	-	-	7	
Lincoln, Neb.	32	25	5	1	1	1	5		Tacoma, Wash.	58	39	10	3	4	2	1	
Minneapolis, Minn.	162	127	21	9	2	3	19										
Omaha, Neb.	100	76	20	4	-	-	7										
St. Louis, Mo.	144	101	28	8	2	5	9										
St. Paul, Minn.	55	38	6	7	2	2	3										
Wichita, Kans.	43	35	5	2	-	1	-										
TOTAL	13,273**	8,755	2,610	1,162	346	383	853										

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

‡Data not available. Figures are estimates based on average of past available 4 weeks.

Mortality Patterns — Continued

The national surveillance of AIDS cases reported a 32% increase in deaths from 1986 to 1987 (CDC, unpublished data). Although part of this increase may be due to modification of the AIDS case definition in 1987 (4), mortality from AIDS appears to be increasing more rapidly than mortality from other conditions.

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*Epidemiologic Notes and Reports***Bovine Tuberculosis — Pennsylvania**

In July 1989, the first outbreak of bovine tuberculosis reported in Pennsylvania since 1978 was detected during routine veterinary surveillance. No human cases were detected.

In a herd of 122 dairy cattle, 109 (89%) had positive skin tests for *Mycobacterium bovis* after routine cervical injection of bovine purified protein derivative (PPD). Since 1985, 11,336 cattle were known to have had contact (e.g., were in the same shows, corrals, or adjacent pastures or were transported together) with the index herd. All identified contacts were tested, and 12 (0.1%) had positive skin tests for *M. bovis*. All cattle with positive skin tests were euthanized and autopsied. Caseating granulomata were present in 16 (15%) of the 109 cattle with positive tests in the index herd but none of the 12 others with positive tests associated with the outbreak. Culture specimens of granulomatous mediastinal lymph nodes from 15 of the 16 grossly positive animals were positive for *M. bovis*.

Forty-two persons were identified who had consumed raw milk products from the index herd or had had direct contact through work with skin-test-positive cattle from the index herd during the past 5 years. Each of these persons was tested with an intradermal injection of 0.1 mL (5 tuberculin units [TU]) of tuberculin, PPD (Tubersol*, Connaught Laboratories, Inc.); none were positive (i.e., induration ≥ 10 mm).

In Pennsylvania, more than 150,000 cattle annually are given caudal skin tests for *M. bovis*. Initially, 2500 TU of bovine PPD are injected intradermally into the caudal region of each animal. Any animal with palpable induration at the injection site 72 hours later receives confirmatory testing. Confirmatory testing consists of intradermal injection of matched equipotent doses of bovine and avian PPD (approximately 2500 TU and 800 TU, respectively) at separate sites in the cervical region. Induration at each site is measured 72 hours after injection and the results plotted against a standard curve (1). Animals with greater than expected induration at the bovine PPD site are considered positive and are euthanized and autopsied. If any cattle in a herd

*Use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Bovine Tuberculosis — Continued

are positive for bovine PPD on confirmatory testing, the entire herd is retested with a cervical intradermal injection of 5000 TU of bovine PPD. All animals in the herd with induration in response to this double-strength bovine PPD injection are considered positive and are euthanized and autopsied.

Since 1978, less than five cattle per year have been euthanized and autopsied as a result of this protocol. In 1988, 178,013 cattle were given caudal skin tests in Pennsylvania, of which 378 (0.2%) were positive; two of these animals were positive on confirmatory cervical testing, and neither of these was positive on autopsy. The infected index herd reported here had been tested during 1988, and none had induration after caudal skin testing during that year. The veterinarian and source of tuberculin used in screening were the same in 1988 as in 1989, and no cattle were introduced into the herd between skin testing in 1988 and 1989.

The Pennsylvania Department of Health has advised all persons known to have contact with skin-test-positive cattle, especially consumers of raw milk products, to have skin testing performed by the department of health. The source of this outbreak is unknown.

Reported by: R Yoxheimer, VMD, Pennsylvania Dept of Agriculture; D Tavis, MD, State Epidemiologist, Pennsylvania State Dept of Health. Bacterial Zoonoses Activity, Div of Bacterial Diseases, Center for Infectious Diseases; Div of Tuberculosis Control, Center for Prevention Svcs; Div of Field Svcs, Epidemiology Program Office, CDC.

Editorial Note: From 1900 to 1930, *M. bovis* was isolated from 6%–30% of human tuberculosis patients in the United States and the United Kingdom (2,3). *M. bovis* can be transmitted from cattle to humans by consumption of raw milk or by respiratory exposure either to live infected cattle or to their carcasses (2–4). Humans with pulmonary *M. bovis* infections can transmit the disease to other humans or to cattle; cattle can also be infected by humans with *M. bovis* urinary tract infections (3). Cattle can transmit *M. bovis* to other cattle, probably by respiratory secretions (5,6). Since opportunistic *Mycobacterium* sp. also infect cattle, comparative testing with *M. avium* antigen is useful to enhance the specificity of skin testing with bovine PPD (7).

Declining rates of *M. bovis* isolation from human tuberculosis patients have been associated with milk pasteurization and with cattle inspection programs (2,3,8,9) such as that initiated in the United States in 1917. Since 1950, *M. bovis* has accounted for <1% of human tuberculosis cases in North America (2,9). *M. bovis* continues to cause disease in humans, however, and is sometimes fatal (10). Continued surveillance of cattle and continued warning against the consumption of raw milk are necessary to protect the human population from this infectious agent and can help eliminate tuberculosis by the year 2010 (11).

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Bovine Tuberculosis — Continued

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Rabies in a Llama — Oklahoma

On November 28, 1989, the first reported case of rabies in a llama in the United States occurred in Oklahoma in a 10-year-old male llama. Approximately 4 weeks before onset of symptoms, the llama was brought to southern Oklahoma from northern Texas, where it had been kept in a pasture for 2 years. On November 21, the llama had onset of ataxia, aggressive behavior, and progressive hind-leg paralysis; the animal died November 27. Rabies was diagnosed by fluorescent antibody test of brain tissue. Monoclonal antibody testing showed that the virus was identical to the antigenically distinct group of viruses found in skunks from the south-central United States.

Two dogs, four llamas, and 46 Angora goats have been quarantined for 6 months' observation because of possible exposure to the rabid llama; these animals had shared a pasture in Oklahoma. Rabies prophylaxis was administered to 13 persons, including the owner and his family, a veterinarian, a veterinarian aide, caretakers, and family friends who were exposed to the llama during the illness or 2 weeks before onset of illness.

Of 3163 animal specimens submitted for rabies testing to the Oklahoma State Department of Health in 1989, 102 (3%) were positive for rabies, including specimens from 74 skunks, seven cattle, six bats, six cats, four dogs, three horses, one raccoon, and one llama. In 1989, two rabid skunks were identified in the Oklahoma county and two in the Texas county where the llama had been kept.

Reported by: M Milton, Stephens County Health Dept; P Boden, MS, C Crocker, K Krisher, PhD, S McNabb, PhD, GR Istre, MD, State Epidemiologist, Oklahoma State Dept of Health. J Perdue, Texas Dept of Health. Viral and Rickettsial Zoonoses Br, Div of Viral and Rickettsial Diseases, Center for Infectious Diseases; Div of Field Svcs, Epidemiology Program Office, CDC.

Editorial Note: Llamas (members of the ungulate family) have become increasingly popular domesticated animals. Approximately 20,000 llamas are currently registered in the United States (International Llama Registry, unpublished data), with approximately 200 being kept in Oklahoma; most of these animals are kept for breeding and showing. The potential for human exposure to rabies from infected llamas at fairs, petting zoos, and parades is a public health concern because of the llama's defensive spitting behavior. No rabies vaccine is licensed for use in llamas.

Virtually all mammals are susceptible to rabies virus infection (1). In the United States, four wild animal groups (bats, foxes, raccoons, and skunks) accounted for at least 85% of reported rabies cases during 1980-1988 (1). Most animals that develop rabies in Oklahoma are believed to be infected from skunks.

Rabies - Continued

In recent years, rabies has been reported for the first time in javelinas (2) and armadillos (3). Rabies must be considered in the differential diagnosis of any mammal with unexplained neurologic illness.

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Addendum: Vol. 39, No. 10

In the article "Influenza Vaccination Coverage Levels in Selected Sites—United States, 1989," the following persons should be added to the credits on page 165: A Hassol, MS, RJ Schmitz, PhD, AM Schwartz, Abt Associates Inc., Cambridge, Massachusetts.

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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

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